

~~SECRET~~FIELD OPERATION NOTES
TRANSISTORIZED RF FREQUENCY CONVERTER*Rewritten by DLH
1908.55
CV-1*

This unit is intended to be used in conjunction with a broadcast receiver in order to receive on one of two predetermined frequencies between 3.0 and 6.0 megacycles. The output is broadly tuned in the neighborhood of 1500 kilocycles. Except for the two crystals which determine the frequencies to which the unit may be tuned and which plug into the top of the converter, this unit is self contained and self powered by its own internal source. The source is a Mallory TR 120R, 2.5 volt battery capable of powering the unit to well over 1,000 hours of operation. This converter is built into a case measuring 2 by 5 by 11/16 inches.

Placing converter in operation:

1. Choose a frequency between 1450 and 1550 kilocycles on which no local station is broadcasting in the area where the unit is to be used. This is the converter IF or output frequency.
2. For each of the two desired reception frequencies choose a crystal (with FT 243 holder) the frequency of which when combined with the signal frequency would equal the frequency mentioned above. The frequencies of these crystals should be between 3.1 and 7.5 megacycles.

Examples: (a) Desired reception frequency, 3 mc. Choose channel output in 1450 to 1550 kc as indicated in paragraph 1 above. Choose an operating

~~SECRET~~

DOCUMENT NO. _____
 NO CHANGE IN CLASS. ☐
☐ DECLASSIFIED
 CLASS. CHANGED TO: TS S ^C
 NEXT REVIEW DATE: 2010
 AUTH: HR 70-2
 DATE: 4 ^{DEC} 1980 REVIEWER: 064540

~~SECRET~~

crystal of 3 mc plus the converter output or 3 mc / 1500 kc or whatever deviation from 1500 kc between 1450 and 1550 kc chosen as the converter output.

(b) If desired reception frequency is 4.5 megacycles choose a crystal with a frequency of 4.5 plus 1.5 or 6.0 megacycles. Avoid using a crystal with a frequency of 4.5 mc minus 1.5 mc as crystals with frequencies lower than 3.1 mc are unreliable in operation.

3. (a) Plug the two crystals into the crystal sockets on top of the converter.
- (b) With screw driver, align black dot of trimmer band 1 to approximate frequency of reception for this band. Align black dot of trimmer band 2 for approximate frequency of reception for this band.
- (c) Connect output cable to broadcast receiver. Braid to ground terminal of receiver, wire to antenna.
- (d) Connect antenna and ground to converter.
- (e) Turn broadcast receiver on. Turn converter on.
- (f) Place band switch of converter in position 1 and tune broadcast receiver for desired signal after which tune trimmer 1 for maximum signal strength.
- (g) Repeat procedure outlined in (f) above for band 2.
- (h) Throw converter switch to off when converter is not in use.

~~SECRET~~

~~SECRET~~

FIELD OPERATION NOTES
TRANSISTORIZED RF FREQUENCY CONVERTER

This unit is intended to be used in conjunction with a broadcast receiver in order to receive on one of two predetermined frequencies between 3.0 and 6.0 megacycles. The output is broadly tuned in the neighborhood of 1500 kilocycles. Except for the two crystals which determine the frequencies to which the unit may be tuned and which plug into the top of the converter, this unit is self contained and self powered by its own internal source. The source is a Mallory TR 120R, 2.5 volt battery capable of powering the unit to well over 1,000 hours of operation. This converter is built into a case measuring 2 by 5 by 11/16 inches.

Placing converter in operation:

1. Choose a frequency between 1450 and 1550 kilocycles on which no local station is broadcasting in the area where the unit is to be used. This is the converter IF or output frequency.
2. For each of the two desired reception frequencies choose a crystal (with FT 243 holder) the frequency of which when combined with the signal frequency would equal the frequency mentioned above. The frequencies of these crystals should be between 3.1 and 7.5 megacycles.

Examples: (a) Desired reception frequency, 3 mc. Choose channel output in 1450 to 1550 kc as indicated in paragraph 1 above. Choose an operating

~~SECRET~~

~~SECRET~~

crystal of 3 mc plus the converter output or 3 mc / 1500 kc or whatever deviation from 1500 kc between 1450 and 1550 kc chosen as the converter output.

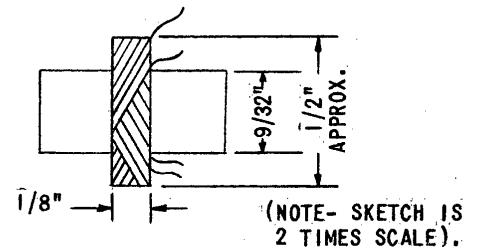
(b) If desired reception frequency is 4.5 megacycles choose a crystal with a frequency of 4.5 plus 1.5 or 6.0 megacycles. Avoid using a crystal with a frequency of 4.5 mc minus 1.5 mc as crystals with frequencies lower than 3.1 mc are unreliable in operation.

3. (a) Plug the two crystals into the crystal sockets on top of the converter.
- (b) With screw driver, align black dot of trimmer band 1 to approximate frequency of reception for this band. Align black dot of trimmer band 2 for approximate frequency of reception for this band.
- (c) Connect output cable to broadcast receiver. Braid to ground terminal of receiver, wire to antenna.
- (d) Connect antenna and ground to converter.
- (e) Turn broadcast receiver on. Turn converter on.
- (f) Place band switch of converter in position 1 and tune broadcast receiver for desired signal after which tune trimmer 1 for maximum signal strength.
- (g) Repeat procedure outlined in (f) above for band 2.
- (h) Throw converter switch to off when converter is not in use.

~~SECRET~~



SOURCE - LABORATORY CONSTRUCTION.
CORE - STACKPOLE TYPE CG-9796.
FORM -PHENOLIC IMPREGNATED PAPER.
WIRE - 3 STRAND, #41, LITZ, SINGLE NYLON FORMVAR.
PRIMARY - 50 TURNS (INNER COIL).
SECONDARY - 125 TURNS (OUTER COIL).
WINDING - UNIVERSAL.
DIMENSIONS - SEE DRAWING

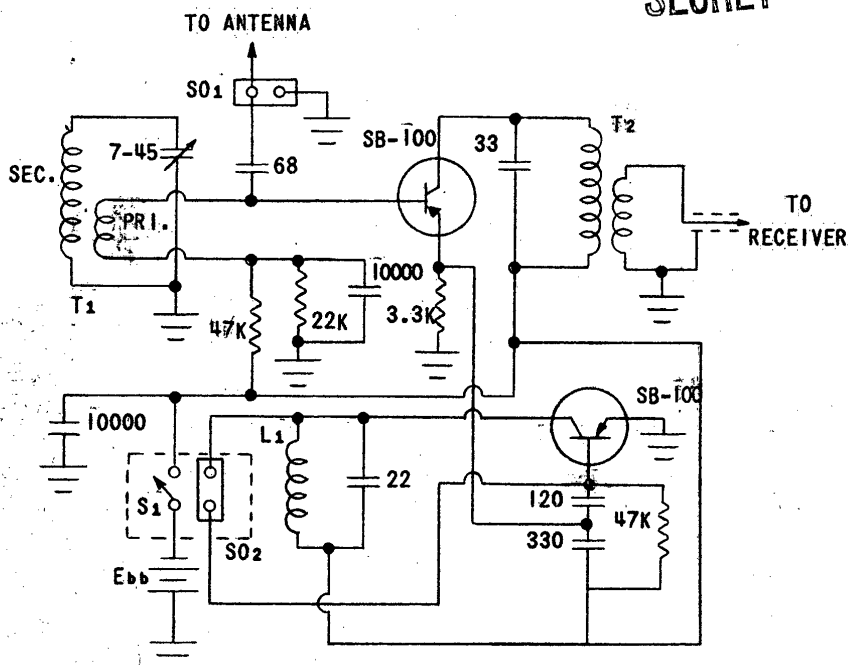


TRANSFORMER T₁

NOTE 1 - SWITCH S₁ IS ACTUATED BY CRYSTAL CASE (SO₂).
NOTE 2 - E_{bb}: 1.34 VOLT MALLORY MERCURY CELL TYPE RM-401R OR
STANDARD FLASHLIGHT CELL.
NOTE 3 - CAPACITOR VALUES ARE IN μ fd.
NOTE 4 - ALL RESISTORS ARE 1/8 WATT.
NOTE 5 - L₁ 50 μ h 33ma RF CHOKE NATIONAL R-33.

TRANSLATED
RF. CONVERTER (CV-1)
16 DECEMBER 1955

SECRET



SCHEMATIC - TRANSISTORIZED
RF CONVERTER (CV-1).

NOTE 1 - SWITCH S₁ IS ACTUATED BY CRYSTAL CASE (SO₂).

NOTE 2 - Ebb: 1.34 VOLT MALLORY MERCURY CELL TYPE RM-401R OR
STANDARD FLASHLIGHT CELL.

NOTE 3 - CAPACITOR VALUES ARE IN $\mu\text{mfd.}$

NOTE 4 - ALL RESISTORS ARE 1/8 WATT.

NOTE 5 - L₁ 50 μ h 33ma RF CHOKE NATIONAL R-33.

This document is part of an integrated file. If separated from the file it must be subjected to individual systematic review.

- TRANSFORMER DATA -

TRANSFORMER T₂

SOURCE - LABORATORY CONSTRUCTION.

CORE - STACKPOLE TYPE CG-9796.

FORM -PHENOLIC IMPREGNATED PAPER.

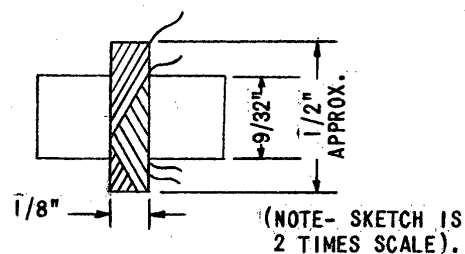
WIRE - 3 STRAND, #41, LITZ, SINGLE NYLON FORMVAR.

PRIMARY - 50 TURNS (INNER COIL).

SECONDARY - 125 TURNS (OUTER COIL).

WINDING - UNIVERSAL.

DIMENSIONS - SEE DRAWING



TRANSFORMER T₁

SOURCE - LABORATORY CONSTRUCTION.

CORE - STACKPOLE TYPE G2.

PRIMARY - 15 TURNS, #38, DOUBLE SILK ENAMEL
(OUTER COIL).

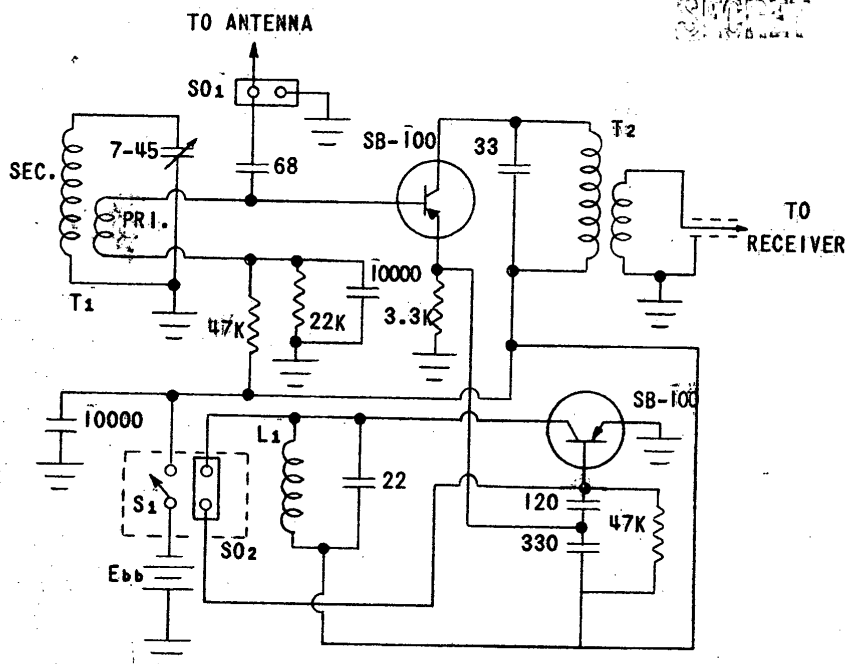
SECONDARY - 67 TURNS (APPROX.), #38 ENAMEL
(INNER COIL).

* ADJUSTED TO RESONATE AT 3 MCS WITH 60 μ fd ON
BOONTON O-METER TYPE 260A.

WINDING - LAYER.

NOTE - THIS DWG.
CORRECTED 3-6-56.

TRANSISTORIZED
RF CONVERTER (CV-1)
16 DECEMBER 1955

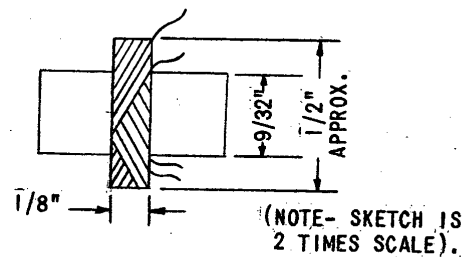
SECRETSCHEMATIC - TRANSISTORIZED
RF CONVERTER (CV-1).

- NOTE 1 - SWITCH S_1 IS ACTUATED BY CRYSTAL CASE (S_{02}).
 NOTE 2 - E_{bb} : 1.34 VOLT MALLORY MERCURY CELL TYPE RM-401R OR STANDARD FLASHLIGHT CELL.
 NOTE 3 - CAPACITOR VALUES ARE IN μfd .
 NOTE 4 - ALL RESISTORS ARE 1/8 WATT.
 NOTE 5 - L_1 50 μh 33ma RF CHOKE NATIONAL R-33.

This document is part of an integrated
 file. If separated from the file it must be
 subjected to individual systematic review.

SECRET**- TRANSFORMER DATA -****TRANSFORMER T_2**

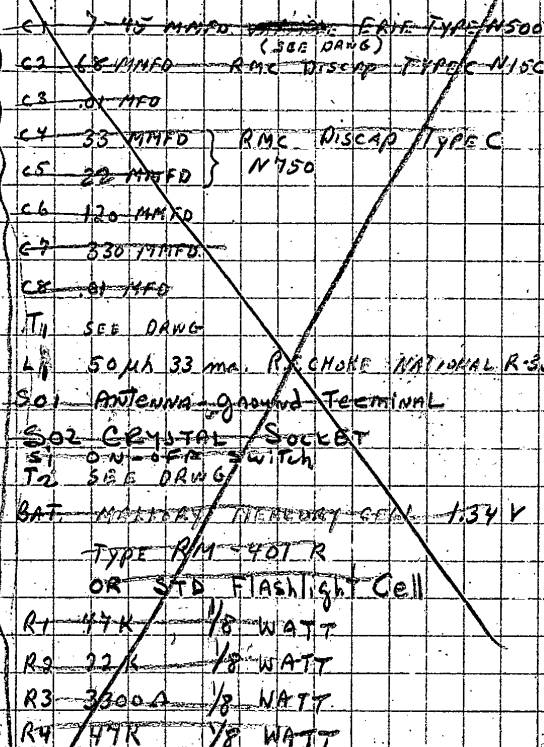
SOURCE - LABORATORY CONSTRUCTION.
 CORE - STACKPOLE TYPE CG-9796.
 FORM - PHENOLIC IMPREGNATED PAPER.
 WIRE - 3 STRAND, #41, LITZ, SINGLE NYLON FORMVAR.
 PRIMARY - 50 TURNS (INNER COIL).
 SECONDARY - 125 TURNS (OUTER COIL).
 WINDING - UNIVERSAL.
 DIMENSIONS - SEE DRAWING

**TRANSFORMER T_1**

SOURCE - LABORATORY CONSTRUCTION.
 CORE - STACKPOLE TYPE G2.
 PRIMARY - 15 TURNS, #38, DOUBLE SILK ENAMEL
 (OUTER COIL).
 SECONDARY - 67 TURNS (APPROX. 1/2), #38 ENAMEL
 (INNER COIL).
 * ADJUSTED TO RESONATE AT 3 MCS WITH 60 μfd ON
 BOONTON Q-METER TYPE 260A.
 WINDING - LAYER.

NOTE - THIS DWG.
 CORRECTED 3-6-56.

TRANSISTORIZED
 RF CONVERTER (CV-1)
 16 DECEMBER 1955



Schematic - TRANSISTORED RF CONVERTER (CV-1)

16 December 1955 16

NOTE:

1. Switch S1 IS ACTUATED BY CRYSTAL CASE. 4. ALL RESISTORS $\frac{1}{2}$ WATT
2. E_{bb} : 134 VOLT MAGGORY MERCURY CELL 5. L, 50 μ h 33 ma RF CHOKE NATIONAL R-33
TYPE RM-401R OR STANDARD
FLASHLIGHT CELL. DATE —
3. CAPACITOR VALUES IN MMFD

This document is part of an integrated file. If separated from the file it must be subjected to individual systematic review.

DATE _____

~~Coil and Transformer Data:~~TRANSFORMER DATA¹⁶TRANSFORMER T2

Source: LABORATORY CONSTRUCTION
 Core: STACKPOLE TYPE CG-9796
 Form: Phenolic-impregnated Paper
 Wire: 3 STRAND, #41, LITZ, Single Nylon FORMVAR
 Primary: 50 TURNS (INNER COIL)
 Secondary: 125 TURNS (OUTER COIL)
 Winding: UNIVERSAL
 Dimensions: SEE DRAWING

(DRAWING)

TRANSFORMER T1

Source: LABORATORY CONSTRUCTION
 Core: STACKPOLE TYPE G2
 Primary: 75 TURNS, #38, Double SILK ENAMEL (outer coil)
 Secondary: 67 TURNS (APPROX)*, #38 ENAMEL (inner coil)
 * ADJUSTED TO RESONATE AT 3 mcs with 60 μ mf
 ON BOONTON Q-meter Type 260A
 Winding: Layer.

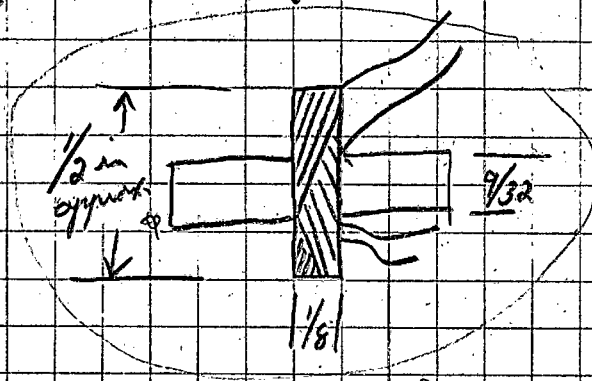
This document is part of an integrated file. If separated from the file it must be subjected to individual systematic review.

~~Core~~ ~~Stack Pole type CG 9796~~

Form - $9/32$ in ϕ internal thread for above core.

Wire - lit Single Nylon Formvar size $3/41$

Core
see below



Prim. (inside) coil 50 turns
Secondary (outside) 125 turns

Coil universal in use

coil winding machine data

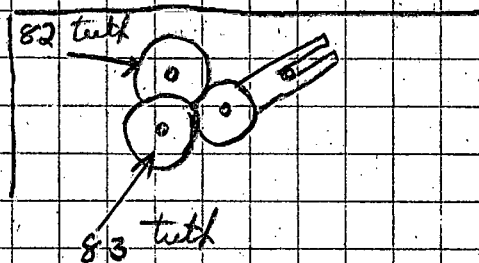
Core: Stack pole
Type CG 9796

Form:

Cam
Dial setting $2\frac{3}{4}$ 125

Back of Machine

This document is part of an integrated file. If separated from the file it must be subjected to individual systematic review.



L₁ core Stackpole G2

L₂ Primary: #38

DSCE 15 Turns

L₁ Secondary: #38

Enamelled, 67 turns

M Q meter Bonton 260A

Adj to resonate with 60 μ ft @ 3ms

Q2